and 8 p. m., and the barometer reading at the center twice each day. It should be noted that while these tracks, especially of the high areas, seem to be well defined, oftentimes the centers can not be exactly ascertained, and the definite lines are sometimes misleading, as though indicating a steady advance of a condition which may be extremely erratic in its apparent movement. We shall obtain a very inadequate idea of the actual weather of the month by a study of these tracks or of the accompanying developments of the high and low areas. It is necessary to take a broader view and to determine whether there were general conditions governing the weather over large regions. It is rather remarkable that the temperature conditions of December were almost exactly reversed from those in November. In the extreme northwest in December we find almost the warmest month of the twenty-seven during which we have observations, while in November it was the coldest of the twenty-seven. If we compare the tracks of high areas in the two months (Chart II) we shall find them almost exactly identical. There is a slight difference, however, in that there was a subpermanent area of high pressure, December 17–23, in the central plateau which had no counterpart in November. On the South Atlantic Coast also the high areas will be found hovering over eastern Tennessee, Kentucky, and central and western North and South Carolina, instead of passing into the ocean as they did in November. A fuller discussion of this question will be found in "Special Contributions."

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a. m.	52	104	4 p. m.	43	63	2,590	3.5	739	30.8
*Ia	3, p. m.	38	78	7, a. m.	33	78	640*	3.5*	183*	7.6
II	5, p. m.	40	125	12, p. m.	31	79	3,430	7.0	490	20.4
III	12, p. m.	35	120	15, p. m.	30	99	1,720	3.0	574	23.9
IV	14, a. m.	50	85	18, p. m.	46	60	2,080	4.5	461	19.2
V	16, a. m.	53	115	20, a. m.	32	96	1,900	4.0	475	19.8
VI	23, a. m.	54	108	26, p. m.	31	89	2,880	3.5	823	34.3
VII	26, p. m.	48	80	31, a. m.	37	80	1,830	4.5	407	17.0
VIII	29, a. m.	52	119	31, p. m.	48	74	1,960	2.5	785	32.7
Total (omitting I*a*)							18,390	32.5	4,754	
Mean of 8 tracks									594	24.8
Mean of 32.5 days									566	23.6
Low areas.										
I	1, a. m.	48	127	5, a. m.	51	69	2,870	4.0	717	29.9
II	3, a. m.	50	124	7, a. m.	46	59	3,170	4.0	794	33.1
III	7, a. m.	55	115	10, p. m.	52	74	2,110	3.5	602	25.1
IV	8, a. m.	50	96	10, a. m.	47	54	2,330	2.0	1,164	48.5
V	9, p. m.	52	123	11, p. m.	46	86	1,780	2.0	890	37.1
VI	11, p. m.	53	103	14, p. m.	46	57	2,330	3.0	776	32.3
VII	11, p. m.	49	127	14, p. m.	50	100	1,280	3.0	426	17.7
VIII	13, a. m.	34	96	18, a. m.	48	55	2,650	5.0	530	22.1
IX	14, a. m.	46	127	19, p. m.	48	60	4,240	5.5	771	32.1
X	19, p. m.	50	116	23, a. m.	40	72	2,710	3.5	773	32.2
XI	24, a. m.	51	110	26, p. m.	49	56	2,570	2.5	1,030	42.9
XII	26, a. m.	47	126	31, a. m.	44	59	3,490	5.0	698	29.1
Total							31,530	43.0	9,171	
Mean of 12 tracks									764	31.8
Mean of 43 days									733	30.5

* Not included in averages.

HIGHS.

Nos. I, V, VI, and VIII were first noted to the north of Montana. Nos. II and III came in from off the central Pacific Coast, and Nos. IV and VII were first noted near Lake Superior. The paths are well distributed over the country. When No. I reached Virginia on the p. m. of the 3d it seems to have divided, a part going northeast to Nova Scotia, and another part hovering over Virginia and North Carolina; there was practically no motion in this offshoot, No. I*a*, and it has not been included in the general summary for the month.* These high areas were unaccompanied by any severe cold waves, though there was a fall of 24° to 28° over a limited area in northern Louisiana and northeast Texas when high area No. VI had reached Illinois on p. m. of the 24th. The absence of marked changes in temperature in the northwest was remarkable, as will be noted in another place.

LOWS.

Most of the lows in December were first noted off the north Pacific Coast or to the north of the State of Washington. The tracks are seen to be parallel and are located mostly along the northern border of the country, disappearing finally in the Gulf of St. Lawrence or off Nova Scotia. The month opened with a disturbance in the south-central Gulf of Mexico. The depression was very slight, and, though it crossed the middle of Florida on the a. m. of the 2d, its track was too ill defined and too short to be charted.

On the 2d the disturbance from the Gulf had moved to the Georgia coast, and caused a gale of 40 miles per hour at Charleston and of 50 miles at Hatteras.

As storm No. IV approached the Atlantic Coast it increased rapidly in energy. On the 9th, p. m., the pressure was 29.16 at Eastport, with winds west 52 miles at New York and southwest 48 miles at Woods Hole. The next morning, 10th, a. m., St. Johns, N. F., reported pressure 28.60 and wind north 40 miles per hour; p. m. of 9th Halifax reported rain 1.48 inch, and Sidney 1.04 in twelve hours; a. m. of 10th St. Johns reported 1.14 inch in twelve hours.

No. VIII began in northeast Texas on the a. m. of the 13th; its motion was east and northeast, most of the time beyond Weather Bureau stations. It was last noted, a. m. of the 18th, over Newfoundland.

As storm No. VIII was passing up the Atlantic Coast the severest winds of the month were experienced. On the 16th, p. m., the wind reached 62 miles per hour for five minutes at Nantucket, with an extreme velocity of 105 miles for one minute. At Greenwich, noon (7 a. m.), 16th, the storm is located by the Hydrographic Office about 380 miles southeast of New York City. The highest 5-minute velocity of the month, 80 miles per hour, was noted at Block Island p. m. of the 16th.

When the last low area of the month was passing into the Gulf of St. Lawrence the last high area had reached the region to the north of Lake Superior. The barometric gradients caused by this combination gave a maximum wind velocity at Sault Ste. Marie of 44 miles per hour, which was the highest December velocity, excepting 50 miles in 1890, experienced at this station.

LOCAL STORMS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

December, 1896, was on the whole a pleasant, sunshiny month. In a few localities severe and unseasonable weather prevailed for a short time, a notable exception being the severe snowstorm that covered Virginia, North and South Carolina, and Georgia on the 2d. Rain on the night of the 1st turned to sleet, and later to snow. As a result the trees, telegraph and telephone poles throughout South Carolina and Georgia were so heavily coated with ice that they broke under the great weight. Telegraphic communication with the outside world was interrupted for more than twenty-four hours over a considerable portion of Georgia and South Carolina. Electric light and fire alarm systems were also completely disabled.

The Atlantic Coast storm of the 17th was attended by high winds and snow on the New Jersey and New England coasts. Steamship traffic was delayed and railroad and street car lines were crippled throughout New England. The three-masted schooner *Ulrica* was wrecked on Nantasket Beach. Three persons were frozen to death in New York.